

Case Report

Cerebral Dural Sinus Obstruction Caused by Parasagittal Meningioma Presenting as Pseudotumor Cerebri

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ABSTRACT

A case of thrombosis of the superior sagittal sinus (SSS) and straight sinus caused by a parasagittal meningioma presenting as pseudotumor cerebri (PTC) is presented along with a review

of the literature. Tumoral occlusion of the venous sinuses is a rare condition but potentially life-threatening and must be kept in mind in the differential diagnosis of PTC.

KEYWORDS: magnetic resonance imaging; meningioma; pseudotumor cerebri; sinus thrombosis; visual acuity

INTRODUCTION

Parasagittal meningiomas often grow adjacent to cerebral venous sinuses, especially the superior sagittal, and may occlude the lumen of a sinus by either invasion or compression against the outer wall at a later stage^[1-4]. However, they grow mainly inside the venous sinus and cause sinus obstruction and thrombosis presenting as pseudotumor cerebri (PTC)^[1-3]. Occlusion of the superior sagittal sinus (SSS), which drains both cerebral hemispheres, is an important cause of PTC in cases of cerebral venous thrombosis^[1-3,5]. One such interesting but tragic case, with ophthalmological complications of PTC resulting from tumoral occlusion of the dural sinuses, is reported.

CASE REPORT

A 35-year-old female patient came to the clinic complaining progressive headaches and bilateral visual loss. She had no history of weight gain, febrile illness, head trauma, seizure or cerebellar ataxia. The family history was unremarkable. The medical history revealed that, four years previously there had been papilledema on examination, but no evidence of a meningioma on cranial computed tomography (CT) and magnetic resonance imaging (MRI) scans. She had been treated with lumboperitoneal shunt placement with a diagnosis of PTC at another institution. The neuro-ophthalmological examination revealed bilateral total visual loss without light perception and secondary optic atrophy. MRI disclosed a hyperdense lesion invading the SSS and straight sinus (Fig. 1 left and Fig. 2). On magnetic resonance angiography (MRA), no flow was seen on the posterior part of the SSS and straight sinus (Fig. 1

right). Gadolinium-enhanced MRI revealed collateral venous channels connecting the SSS and the great cerebral vein as well as feeders and drainers of the tumor (Fig. 2). The most probable diagnosis of this type of tumor was meningioma in spite of the lack of histopathological examination. A decision was taken to excise the tumor, because of the risk of an increase in the size of the tumor, but the patient refused surgical intervention.

DISCUSSION

Review of the literature clearly indicates that cerebral venous sinus thrombosis in adult women is more commonly seen as a complication of pregnancy or tumoral involvement^[5,6]. The data from the literature revealed an association between the occurrence of intracranial thrombosis and meningioma^[7,8]. It was suggested that the involvement of the dural venous sinuses by the meningioma led to subsequent sinus occlusion and thrombosis. The diagnosis of venous sinus invasion and thrombosis is important, but early diagnosis can be confusing and treatment difficult.

It is speculated that some cases of PTC or benign intracranial hypertension may, in fact, represent neoplastic cerebral venous sinus obstruction by thrombosis. Sinus thrombosis occurring after sinus occlusion may also cause ophthalmological complications, if it remains undiagnosed, as in the present case. The need for early diagnosis and treatment of underlying meningioma is, therefore, stressed to avoid this condition. The role of CT, angiography, and MRI studies in establishing this diagnosis has been described^[4,6,7,9-12]. The thrombosed sinus is isodense signal with brain on T1-weighted images and hypodense on T2-weighted

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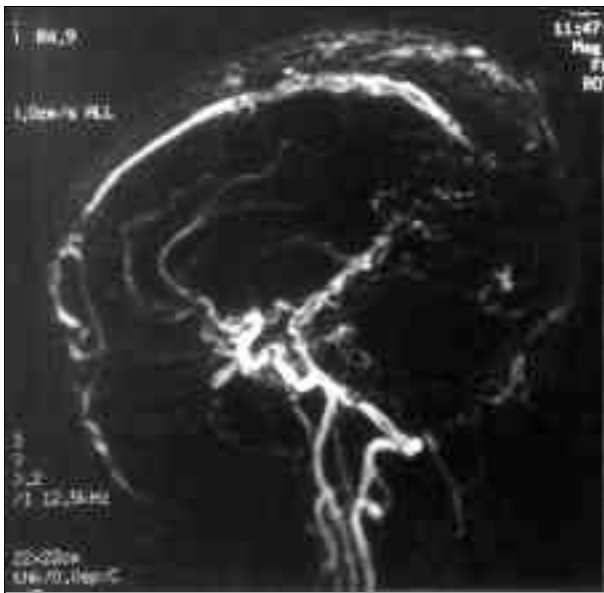


Fig. 1: Left: T1-weighted sagittal MRI demonstrating a hyperdense thrombus (asterisk) completely filling the posterior part of the superior sagittal sinus (SSS). Right: Sagittal MRA shows the presence of a "parasagittal block" (asterisk) of an intracranial venous blood flow in the occipital region.



Fig. 2: Left: Gadolinium-enhanced T1-weighted axial image showing a parasagittal mass (arrow) invading the posterior region of the superior sagittal sinus (SSS) with some residual thrombi and dilations. Right: Gadolinium-enhanced T1-weighted sagittal image revealing collateral venous channels connecting the SSS and the great cerebral vein as well as feeders and drainers of the tumor (arrow).

images in the case of acute thrombosis^[11]. On both T1- and T2-weighted images, however, thrombosis in the chronic stage demonstrates increased signal compared with that of brain because of the formation of methemoglobin, as in this case^[11].

MRI and MRA should be the imaging methods of choice in patients suspected of having tumoral occlusion or thrombosis of a dural sinus. Therefore, it is important to list neoplastic cranial venous sinus involvement in the differential diagnosis of PTC. Although PTC can be treated by medical treatment and/or lumboperitoneal shunt placement, the treatment of a case with dural sinus thrombosis associated with meningioma is primarily, surgical removal of the offending lesion.

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